

Memorandum

TO: Kalin Pacheco, Caltrans

FROM: Michelle Bina, Cambridge Systematics

DATE: April 30, 2014

RE: CSTDM Standard Reports

The California Statewide Travel Demand Model (CSTDM) Version 2.0, forecasts all personal travel made by every California resident, plus all commercial vehicle travel, made on a typical weekday in the fall/spring (when schools are in session). CSTDMv2.0 has five demand models:

- A Short Distance Personal Travel Model (SDPTM) for intra-California trips;
- A Long Distance Personal Travel Model (LDPTM) for intra-California trips;
- A Short Distance Commercial Vehicle Model (SDCVM) for intra-California trips;
- A Long Distance Commercial Vehicle Model (LDCVM) for intra-California trips;
- An External Vehicle Trip Model (ETM) for trips with origin and/or destination outside California.

This memo provides a list of the reports available from the CSTDMv2.0, Graphic User Interface (GUI). All standard reports are available in the CSTDM Summary Scripts section of the GUI.

Trip/tour-based Metrics

A number of metrics can be extracted from the person trip records and vehicle trip tables. Total daily person or vehicle trips, person trips by mode, trips by time period, and trips by vehicle types can be aggregated into the following matrices:

- County-to-county;
- Region-to-region (based on MPO/RTPA boundaries); and
- Caltrans district-to-district.

The following trips can also be summarized:

- Vehicle trips by purpose
 - SDPTM trips are summarized by primary tour purpose: work, school, and other.
 - SDPTM trips are summarized by trip purpose: home-based work, home-based shop, home-based other, and non-home based.
 - LDPTM will summarized by purpose (business versus non-business travel).
- Person trips by mode by time of day
 - SDPTM trips are summarized by SOV, HOV (2 and 3+), bike, walk, and transit (walk- and drive-to-transit).
 - LDPTM trips are summarized by SOV, HOV (2 and 3+), air, conventional rail, and HSR.

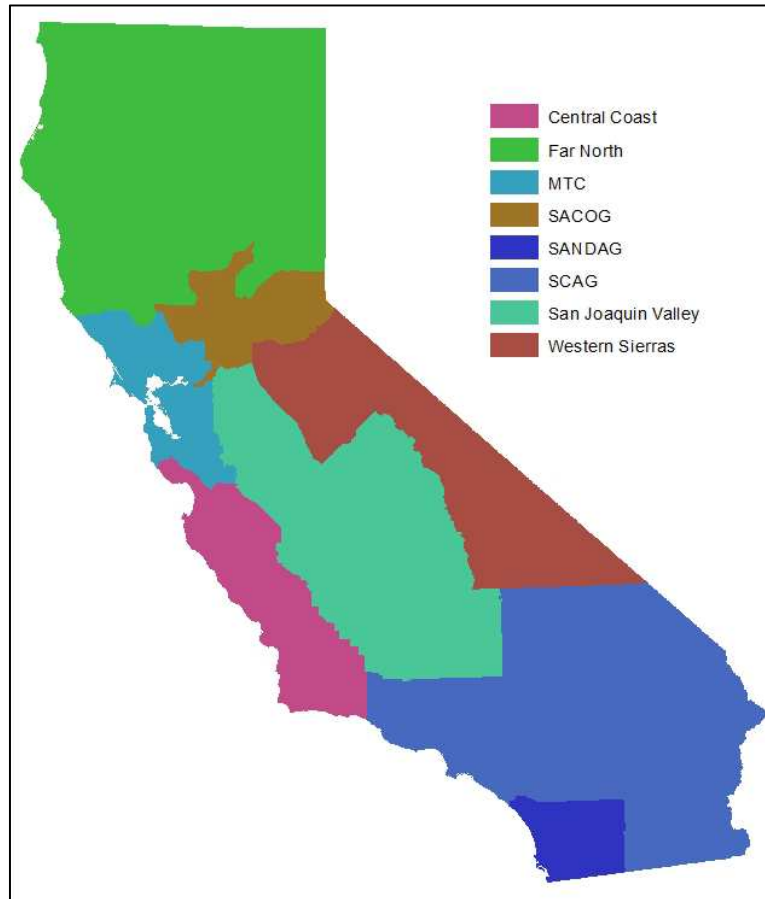
Vehicle miles traveled (VMT) can also be calculated for those movements from the skims. These outputs are in the form of a matrix and can be extracted for table summaries or desire line graphics.

In addition to SDPTM and LDPTM summaries, summary scripts were created to output SDCVM and LDCVM by an aggregated 8-regions, referred to as Super Regions, as shown in Figure 1. ETM trips can also be extracted by trip type – external to internal (E-I), internal to external (I-E), and external to external (E-E).

Transit Ridership

Transit is not specifically validated at the route or operator level for CSTDMv2.0. However, ridership information can be summarized. A transit assignment section was added to the GUI that assigns SDPTM and LDPTM transit trips to the transit rail network. Another script summarizes daily transit trips within the local bus catchment areas. We recommend examining the relative changes across alternatives or years rather than analyzing specific ridership values.

Figure 1. Summary Super Regions



Link-based Metrics

The loaded networks can be used to plot out volumes, delay, or congestion (v/c ratios). Scripts are also available to summarize that data into the follow metrics:

- Total volume (Statewide or by County)
- Interzonal VMT¹ by speed bin by vehicle type (can be output for specific regions, counties, facility type, or any link attribute filter specified)
- Maintained miles and lane miles (can be output for specific regions, counties, facility type, or any link attribute filter specified)
- Vehicle hours of delay (Statewide or by Caltrans route number)

Some are templates that Caltrans staff can use as the base for their specific requests. For example, the graphic below provides the beginning of such a script. After the inputs and outputs are specified, there are a number of filtering examples set. The graphic below shows a script that summarized VMT by speed bin for only San Diego county. One could modify the script for any county or to summarize only freeways in San Diego.

Figure 2. Example Summary Script

```
1 ; Do not change filenames or add or remove FILEI/FILEO statements using an editor. Use Cube/Application Ma
2 RUN PGM=NETWORK PRNFILE="{Catalog_Dir}\APPLICATIONS\01NET00D.PRN" MSG='Calculate Interzonal VMT By Speed B
3 FILEO PRINTO[2] = "{Catalog_Dir}\Base\{Scenario_ShortName}\Output\InterVMTSB_TRK_SD_{YEAR}.CSV"
4 FILEO PRINTO[1] = "{Catalog_Dir}\Base\{Scenario_ShortName}\Output\InterVMTSB_VEH_SD_{YEAR}.CSV"
5 FILEI LINKI[4] = "{Catalog_Dir}\Base\{Scenario_ShortName}\LoadedNetworks\HwyNetwork_LOADED_PM_{YEAR}.NET"
6 FILEI LINKI[3] = "{Catalog_Dir}\Base\{Scenario_ShortName}\LoadedNetworks\HwyNetwork_LOADED_MID_{YEAR}.NET"
7 FILEI LINKI[2] = "{Catalog_Dir}\Base\{Scenario_ShortName}\LoadedNetworks\HwyNetwork_LOADED_AM_{YEAR}.NET"
8 FILEI LINKI[1] = "{Catalog_Dir}\Base\{Scenario_ShortName}\LoadedNetworks\HwyNetwork_LOADED_OFF_{YEAR}.NET"
9
10 I
11 ;
12 ; Calculate Link-Based VMT
13 ;
14 IF (LI.1.COUNTY_1 = 'San Diego') ; Select only San Diego County ; edit needs to be made 4 times, once for
15 IF (LI.1.FTYPE = 1,2,3,4,5,7,8) ; Select only roadway links
16 IF (LI.1.SPEED>0) ; Speed must be greater than zero to have vehicles traveling and thus generating VMT
17 ;
18 ; OFFPEAK
19 ;
20 ; Determine appropriate speed bin that VMT falls into (>0 TO 5 MPH) by vehicle type
21 IF (LI.1.CSPD_2>0 & LI.1.CSPD_2<=5)
22     COMP _VMT_OFF_VEH5= _VMT_OFF_VEH5 + (LI.1.V1_2+LI.1.V2_2+LI.1.V3_2+LI.1.V4_2+LI.1.V7_2+LI.1.V8_2+LI.1.
23     COMP _VMT_OFF_TRK5= _VMT_OFF_TRK5 + (LI.1.V5_2+LI.1.V6_2+LI.1.V10_2+LI.1.V14_2+LI.1.V15_2)*LI.1.DISTAN
```

¹ Note that summaries of intrazonal VMT are also available in the GUI, based on daily intrazonal trips and intrazonal distances from offpeak auto skims.